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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,350	01/09/2006	Monika Jobmann	234682	3521

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EXAMINER	
HAIDER, SAIRA BANO	
ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
04/01/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/527,350	JOBMANN ET AL.	
	Examiner	Art Unit	
	SAIRA HAIDER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/10/2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9-15 and 17-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 9-15 and 17-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/10/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/10/2010 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-5, 8-11 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menting (US 2003/0165682).

4. Menting discloses microcapsules comprising a core of a rubber additive material encased by a casing (referred to by Menting as the coating) and further encased by a waxy-material (abstract; example 6) for use in rubber vulcanization.

5. The wax-material creates a free-flowing composition and thus is considered to reduce the static friction as claimed ([0060]). The casing material is stable up to 130°C (0031]). The coating of Menting melts in the temperature ranges of rubber vulcanization ([0029]), thus the core is released in a controlled manner. A suitable rubber additive material is crystalline or amorphous sulphur ([0025]).

6. In reference to the limitation regarding two shells made from an amino resin, it is noted that Menting discloses that the coating can be made of an amino-aldehyde resin [0028], a second shell layer is not disclosed. Menting discloses that the release of the encapsulated additive takes place

only when the coating material melts and dissolves in the rubber [0050]. In view of such teachings, it would have been obvious to one of ordinary skill in the art to form a second amino-aldehyde based shell in order to form a thicker shell layer which will further delay release of the core material.

7. In reference to the limitation reading the sliding or wearing layer, it is noted that Menting discloses that the final microcapsules are coated with a low-melting-wax-like substance, such as pentaerythritoltetra-stearate (example 6). Wherein this compound is a fatty acid derivative and has a molecular weight of 1201 g/mol thus is considered to read on the claimed low molecular weight waxes, fatty acid derivatives. Menting teaches that the application of this layer converts the microcapsules into beads which do not contain dust, are free flowing and holds the microcapsules together (example 6). Wherein it would have been obvious to one of ordinary skill in the art to apply the sliding layer to the two-shell microcapsule taught by Menting in order to form free-flowing microcapsule beads which do not contain dust and are free flowing.

8. In reference to claims 9 and 24, Menting discloses that after the first shell the particle size is increased from 5 microns to roughly 5 microns (example 1). It follows that the addition of the second shell is not considered to significantly increase the size of the microcapsule and the microcapsule would have a final diameter of about greater than 5 microns. Thus it would have been obvious to one skilled in the art that the final microcapsule would fall within the claimed range of 1 to 50 microns, preferably 5 to 25 microns. Further, Menting discloses that a suitable particle starting size can be as low as 1 micron ([0034]). Accordingly, the final particle size would also be decreased. It would have been obvious to one of ordinary skill in the art at the time of the invention to control the size of the final microcapsule by both adjusting the size of the initial starting particle.

9. The size of the particle is recognized as a result-effective variable because changing it will clearly affect the type of product obtained. Wherein a decrease in the diameter of the particle will

result in a greater number of possible particles by weight included in the final composition, further, a greater number of particles provide a greater distribution and thus improved vulcanization in the rubber. Thus it would have been obvious to one of ordinary skill in the art to utilize a microcapsule having the claimed diameters so as to produce the desired end results. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. In reference to claims 5 and 23, Menting discloses that that starting size of the sulphur is 5 microns and after the first shell is applied the particle size is increased from 5 microns to roughly 5 microns (example 1). It follows that the addition of the second shell is not considered to significantly increase the size of the microcapsule. Wherein it is clear that amount of core sulphur comprises the majority of the microcapsule. The amount of core sulphur in the microcapsules is recognized as a result-effective variable because changing it will clearly affect the product obtained. Wherein an increase in the percentage of core sulphur will result in microcapsules capable of releasing a larger amount of sulphur vulcanizing agent for use in the rubber and thus less microcapsules are required to attain the desired result. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a microcapsule having the claimed large percentage of sulphur in the core so as to product the desired end results. See MPEP 2144.05(B).

11. In reference to claim 10, Menting discloses that after the first shell the particle size goes from 5 microns to roughly 5 microns (example 1). Therefore it does not appear that the coating is of a significant thickness. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to increase the thickness of the first and second shells in order to decrease the release time of the core material.

12. Additionally, the thickness of the first and second shells is recognized as a result-effective variable because changing it will clearly affect the type of product obtained. Wherein an increase in the thickness of the first and/or second shell will result in an increase in the release time of the core material and this allow the final composition to be subjected to a higher processing temperature prior to vulcanization. Thus it would have been obvious to one of ordinary skill in the art to utilize a microcapsule having the claimed first and/or second shell thickness so as to produce the desired end results.

13. In reference to claim 11, Menting notes that the final particle size is as low as 100 microns, wherein the starting size of the sulphur was 5 microns (examples 1 and 6). Accordingly, the shells and the waxy-coating have a thickness of 95 microns.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Menting (US 2003/0165682) in view of Johnson (US 2,623,079).

15. Menting applies as discussed above, but fails to disclose the compounds claimed as the first polymer material. In reference to claim 6, Menting applies as discussed above and discloses suitable shell materials as amino-aldehyde resins (col. 4, lines 2-9); however the reference fails to disclose the specifically claimed compounds.

16. Thus attention is directed towards the Johnson reference which discloses the encapsulation of sulphur particles using melamine formaldehyde resins (col. 1, lines 1-6; col. 3, lines 64-69). Johnson notes that melamine formaldehyde resins are suitable as the coating material because it is one in which the sulphur is not soluble, it is substantially insoluble in the compounded rubber, it retains protective sealing during milling, is not extensively softened by contact with the rubber compound, is inert at the milling temperatures, and is stable at a temperature of about 140°C (col. 3,

lines 37-69). Accordingly, in view of the above mentioned benefits of melamine formaldehyde it would have been obvious to one skilled in the art to utilize melamine formaldehyde as the first and second shell layers of the microcapsule taught by Menting.

17. Claims 12-15 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menting (US 2003/0165682) in further view of Okada et al. (US 4,670,344).

18. Menting and applies as discussed above, but fail to disclose the claimed prepolymeric solution and curing process for the melamine formaldehyde first and second shells, as per claim 12 and the dependent claims thereof. Thus attention is directed towards the Okada reference which discloses a melamine formaldehyde polymeric shell of a microcapsule formed by dispersing the liquid core material within the prepolymer solution (abstract, col. 2, line 60 to col. 3, line 3), and chemically curing the microcapsule via an acid catalyst (col. 4, lines 63-65) or heat (Example 1). The final microcapsules are filtered and dried (Example 1(d)). Menting recognizes that a variety of suitable methods can be used to prepare the microcapsules ([0042]). Wherein the Okada reference represents an alternate method of forming the favorable melamine formaldehyde first shell when the core material is a liquid. Okada notes that the disclosed method allows for control of the ratio of formaldehyde to melamine in order to form a shell which is homogenous and excellent in mechanical strength, impermeability and solvent resistance. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the method of Okada to encapsulated sulphur in a melamine formaldehyde first shell as taught by Menting. Further it would have been obvious to form a second melamine formaldehyde shell via repetition of the process of Okada in order to form a thicker shell layer which will further delay release of the core material.

Wherein utilization of a recognized method is within the skill of one in the art and the method of Okada proves controls in the ratio of the shell materials to improve properties.

19. In reference to part (d) of claim 12, it is noted that the above rejection only alters the process of formation of the first and second shell, thus the sliding layer would be formed via the process of Menting. The second polymer (also reads on the sliding or wearing layer) is deposited via fluidized bed reactor, a type of spray drying, as disclosed by Menting (example 6). In reference to claim 20 which requires granulation, Menting discloses that the microcapsules are formed into beads upon application of the sliding layer – i.e. the microcapsules are agglomerated ([0061]). Thus the claimed process will result in the claimed granulation of the microcapsules.

Response to Arguments

20. Applicant's arguments filed 03/10/2010 have been fully considered but they are not persuasive.

21. Applicant has essentially argued that the coating materials of Menting read on the claimed sliding or wearing layer (c). In response the coating of Menting reads on the claimed shell, wherein the fact that Menting refers to the material as a casing/coating layer does not discount the fact that the it fully coats, encases and encapsulates the core rubber additive material. Applicant noted that Menting teaches away from the use of two shells for encapsulation of the rubber additive by teaching coating the rubber additives with a coating layer that is incomparable to the dual shells according to feature (b) of claim 1. In response, Menting explicitly teaches encapsulating the rubber additive with an amino-aldehyde resin [0028], which reads on the claimed shell material as per feature (b) of claim 1. Additionally, Menting discloses that the release of the encapsulated additive takes place only when the coating material melts and dissolves in the rubber [0050]. Thus, as noted in the rejection it would have been obvious to one of ordinary skill in the art at the time of the

invention to for a second amino-aldehyde based shell layer in order to form a thicker shell layer which will further delay release of the core material.

22. In response to applicant's argument that Menting fails to achieve the results of the present invention- high mechanical stability and lower amount of extractable sulfur by magnitudes, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985)

23. Applicant has argued the presence of unexpected results, citing Examples 2-14 of the specification as support. The figures compare the difference in wetting area of a composition comprising a single polymer (as per the invention) and a composition free of polymer.

24. The examiner has thoroughly reconsidered the examples provided in the specification, and has rendered the totality of showings insufficient to overcome the prior art rejections set forth above because: it include(s) statements which amount to an affirmation that the claimed subject matter functions as it was intended to function. The examples show a dual capsule wall made of melamine formaldehyde resin has lower extractable sulfur and higher stability than a mono-layer capsule wall made of melamine formaldehyde resin. It is expected that the presence of an additional capsule wall will decrease the amount of core material extractable and will enhance the stability of the microcapsule. The examples fail to prove any unexpected success of the claimed invention, rather the examples affirm that the claimed subject matter functions as it was intended to function. This conclusion is not relevant to the issue of nonobviousness of the claimed subject matter and provides no objective evidence thereof. Applicants' attention is directed to MPEP §716 which discloses the requirements for effectively rebutting a *prima facie* case of obviousness based on unexpected results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAIRA HAIDER whose telephone number is (571)272-3553. The examiner can normally be reached on Monday-Friday from 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796

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